AMENDMENTS IN THE CLAIMS

1-12 (Cancelled)

13. (Currently amended) A heat exchange catheter system for cooling a target organ, the heat exchange catheter system adapted for placement within an anatomical structure of a subject, comprising: (a) a first elongate tubular body 1 having a proximal end and a distal end, (b) a second elongate tubular body 2 having a proximal end and a distal end, (c) a balloon 4 defining a lumen 8 in fluid communication with both the first elongate tubular body 1 and the second elongate tubular body 2 so as to form a continuous fluid pathway, further comprising a third elongate tubular body 3 having a proximal end and a distal end, the third elongate tubular body disposed longitudinally within the second elongate tubular body, and wherein the balloon is sealably affixed to the outer surface of the first elongate tubular body and sealably affixed to the outer surface of the third elongate tubular body, the lumen 8 further comprising a thermal exchange composition, wherein the thermal exchange composition [[flows]] is disposed within the continuous fluid pathway formed by the second elongate tubular body 2, the first elongate tubular body 1, and the balloon lumen 8 and wherein the thermal exchange composition is selected from the group consisting of a solid, a gel, a liquid, and a gas, (d) a transducer 29, and wherein the balloon, when inflated has a longitudinally disposed groove upon its outer surface and is adapted to conform in shape and size to the interior of the anatomical structure such that when placed within the anatomical structure and inflated, the outer surface of the balloon is at least partially in contact with the inner surface of the anatomical structure providing a heat exchange surface by which heat is exchanged between the anatomical structure and interior of the balloon, and whereby the target organ adjacent to the anatomical structure is thereby cooled .

14. (Original) The heat exchange catheter system of claim 13 further comprising a guidewire disposed longitudinally within the third elongate tubular body, the guidewire having a proximal end and a distal end.

15-33. (Canceled)

34. (Currently amended) A method of altering the temperature of the myocardium of the heart in a subject, the method comprising the steps of: placing a heat exchange catheter system into the esophagus of a subject, wherein the heat exchange catheter system is adapted for placement within an anatomical structure of a subject, and comprises (a) a first elongate tubular body 1 having a proximal end and a distal end, (b) a second elongate tubular body 2 having a proximal end and a distal end, (c) a transducer 29, (d) a marker 31, (e) a balloon 4 defining a lumen 8 in fluid communication with both the first elongate tubular body 1 and the second elongate tubular body 2 so as to form a continuous fluid pathway, further comprising a thermal exchange composition within balloon lumen 8, wherein the thermal exchange composition flows within the continuous fluid pathway formed by the second elongate tubular body 2, the first elongate tubular body 1, and the balloon lumen 8, and wherein the balloon, when inflated, has a longitudinally disposed groove upon its outer surface and is adapted to conform in shape and size to the interior of the anatomical structure such that when placed within the anatomical structure and inflated, the outer surface of the balloon is at least partially in contact with the inner surface of the anatomical structure providing a heat exchange surface by which heat is exchanged between the anatomical structure and interior of the balloon, and whereby the target organ adjacent to the anatomical structure is thereby cooled; and circulating the thermal exchange composition within the continuous fluid pathway, whereby the myocardium of the heart is cooled.

35. (Original) The method of claim 34 wherein the temperature of the myocardium of the heart is altered at a rate of between about 0.5°C/hour and 30°C/hour.

36. (Original) The method of claim 34 wherein the temperature of the myocardium of the heart is altered at a rate of between about 3°C/hour and 5°C/hour.

37. (Previously presented) The heat exchange catheter system of claim 13 wherein the second elongate tubular body is disposed longitudinally within the first elongate tubular body 1.

38. (Previously presented) The heat exchange catheter system of claim 13 wherein the subject is a human subject, wherein the anatomical structure is the esophagus, and the target organ is the heart.

39. (Previously presented) The heat exchange catheter system of claim 13 wherein the balloon is shaped and sized for placement in the anatomical structure selected from the group consisting of: the esophagus, the oral cavity, the nasopharyngeal cavity, the auditory tube and tympanic cavity, the sinus of the brain, the arterial system, the venous system, the larynx, the trachea, the bronchus, the stomach, the duodenum, the ileum, the colon, the rectum, the bladder, the ureter, the ejaculatory duct, the vas deferens, the urethra, the uterine cavity, the vaginal canal, and the cervical canal.

40. (Previously presented) The heat exchange catheter system if claim 13 wherein the target organ is selected from the group consisting of: the myocardium of the heart, the lungs, the thymus, the thyroid, the liver, the pancreas, the kidney, the uterus, the ovary, the testis, the prostate, and the brain.

41. (Previously presented) The heat exchange catheter system of claim 13 wherein the balloon conducts heat from the anatomical structure to the thermal exchange composition.

42. (Previously presented) The heat exchange catheter system of claim 13 further comprising an ultrasound transducer affixed thereto.

43. (Previously presented) The heat exchange catheter system of claim 13 further comprising a guide sheath 25 fitted over at least a portion of the first elongate tubular body.

44. (Previously presented) The heat exchange catheter system of claim 14 further comprising a digestible composition 30 affixed at or near the distal end of the guidewire.

45. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 0.5°C/hour and 30°C/hour.

46. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 2.0°C/hour and 10°C/hour.

47. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 5°C/hour to about 3°C/hour.

48. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 0.5°C/30 minutes and 30°C/30 minutes.

49. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 2.0°C/30 minutes and 10°C/30 minutes.

50. (Previously presented) The heat exchange catheter system of claim 13, wherein the target organ is cooled at a rate of between about 2°C/30 minutes to about 5°C/30 minutes.